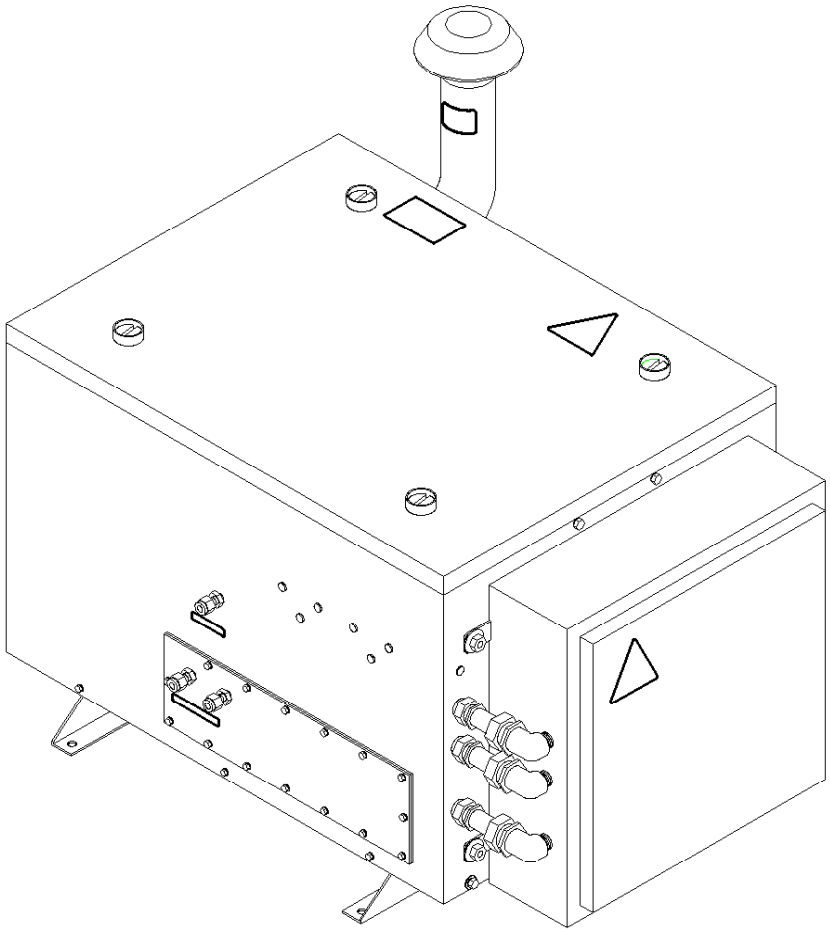
Operation and Installation Manual

3M™ EO Abator

Models 50AN, 50AE, 50AJ



3M Health Care

TABLE OF CONTENTS

Page

Read, understand, and follow all safety information contained in these instructions prior to using the 3M EO Abator. Retain these instructions for future reference.

Intended Use:

The 3M™ EO Abator is intended to remove ethylene oxide (EO) from the exhaust of 3M™ Steri-Vac™ Sterilizers and Aerators. The EO Abator converts EO into carbon dioxide and water vapor through a heated catalytic process. Use with other than 3M™ Steri-Vac™ Sterilizers and Aerators could lead to an unsafe condition.

Safety Information:

Explanation of Signal Words and Symbols

WARNING: Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

Attention: Read accompanying documentation

Warning: Risk of Electric Shock

Warning: Hot Surfaces

⚠ WARNING

- **To reduce the risk associated with hazardous voltage, which if not avoided, could result in death or serious injury:**
  - Do not attempt to service and/or open the EO Abator.
  - Service should only be performed by 3M Authorized Service Personnel.
- **To reduce the risk associated with high temperature, which if not avoided, could result in death or serious injury and/or property damage:**
  - Do not touch the exhaust lines or the immediate area around them.
  - Do not place items next to the EO Abator. Follow clearance requirements listed in the Operation and Installation Manual.

Safety Information:

⚠ WARNING

- **The 3M EO Abator processes ethylene oxide gas exhausted from 3M Steri-Vac Sterilizers.**

KEEP OUT OF REACH OF CHILDREN

DANGER

EXTREMELY FLAMMABLE – DO NOT USE NEAR FLAME

CANCER HAZARD AND REPRODUCTIVE HAZARD

Use Only in Accordance with Manufacturer's Instructions in Steri-Vac Gas Sterilizers

ETHYLENE OXIDE VAPOR HARMFUL. MAY CAUSE BURNS

Users must follow the requirements of the OSHA occupational exposure standard for ethylene oxide (29 CFR 1910.1047)

STATEMENT OF PRACTICAL TREATMENT: IN ALL CASES GET MEDICAL ATTENTION IMMEDIATELY. TAKE PERSON TO A DOCTOR OR EMERGENCY TREATMENT FACILITY AT ONCE.
IF INHALED: Remove exposed person to fresh air, keep warm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician even if no symptoms are present. Keep under medical observation. Symptoms may be delayed.
IN CASE OF CONTACT: Immediately flush eyes and skin with plenty of water for at least 15 minutes while removing contaminated clothing and discard leather goods.
IF SWALLOWED: Give at least two glasses of water. Do not induce vomiting. Do not give anything by mouth to an unconscious person. Call a physician.
NOTE TO PHYSICIAN: If respiratory problems, use respiratory support.

DIRECTIONS FOR USE: It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. It is the employer's responsibility to follow the requirements of 29 CFR 1910.1047.
This product may be used only in Steri-Vac Gas Sterilizers designed for use with Steri-Gas EO Gas Cartridges. This product may be used only by persons who have been trained in accordance with 29 CFR 1910.1047.
For complete use directions (including type of surfaces, objects, or items/products recommended for treatment, per cleaning instructions, concentration of gas per unit volume of closed space to be treated, exposure time/temperature, relative humidity, ventilation/aeration time, and method of monitoring to be used) refer to ethylene oxide gas sterilizer manufacturers' operators manuals.
This product may be used only to sterilize medical or laboratory items, pharmaceuticals, and aseptic packaging or to reduce microbial load on cosmetics.

PRECAUTIONARY STATEMENTS: HAZARD TO HUMANS CAUSES EYE AND SKIN BURNS. HARMFUL IF INHALED. MAY CAUSE NERVOUS SYSTEM DAMAGE.
EFFECTS OF OVER EXPOSURE: May be fatal if inhaled in high concentrations. May cause irritation of respiratory tract, chest tightness, headache, nausea, vomiting, diarrhea, light-headed feelings, dizziness, weakness, drowsiness, cyanosis, loss of coordination, convulsions, coma, delayed lung injury (fluid in lungs) immediate or delayed skin irritation and blisters allergic skin.
OTHER POSSIBLE DELAYED HEALTH EFFECTS – May cause nervous system injury, cataracts, adverse reproductive effects, chromosomal and mutagenic changes, and cancer.
PEL: 1ppm-TWA Ethylene Oxide (OSHA 29 CFR 1910.1047)
EL: 5ppm-excursion limit, 15 minutes.
ODOR: Ether-like in high concentrations. Exposure to toxic levels may occur without warning or detection by the user.
PRECAUTIONS: Do not breathe vapor. Do not swallow. Do not get in eyes, on skin or on clothing. Store and use with adequate ventilation in accordance with 29 CFR 1910.1047.
PHYSICAL AND CHEMICAL HAZARDS: DANGER. FLAMMABLE LIQUID AND GAS UNDER PRESSURE. Do not use near flame, electrical sparks or hot surfaces. Ground all equipment to prevent static sparks. Contents under pressure. Do not puncture or incinerate container. Exposure to temperatures above 150 F may cause bursting.
STORAGE AND DISPOSAL: Do not contaminate water, food or feed by storage or disposal. Store at room temperature. Store and use in accordance with 29 CFR 1910.1047.
Pesticide Disposal: Do not puncture or incinerate unused cartridges. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide is a violation of Federal Law. Contact your State Pesticide or Environmental Control Agency or the Hazardous Waste Representative at the nearest EPA Regional Office for Guidance.
Container Disposal: Aerate empty cartridges according to instructions in equipment manual. After aeration, dispose of immediately with nonincinerated waste.

EPA Reg. No. 7182-1
EPA Est 3657-WI-2

⚠ CAUTION

- **To reduce the risk associated with environmental contamination, which if not avoided, may result in minor or moderate injury:**
  - The EO Abator must be properly installed as indicated in the Operation and Installation Manual.
  - Return used catalytic cells to 3M Health Care Service Center for proper handling.
  - At the end of product life, dispose of all components in accordance with applicable governmental regulations.

- **To reduce the risk associated with environmental contamination and/or hazardous voltage, which if not avoided, may result in minor or moderate injury:**
  - The EO Abator has been designed and tested only to be used with 3M Steri-Vac Sterilizers and Aerators.

Safety Information:

Environmental Operating Conditions

Environmental Condition	Operating Condition	Units
Altitude	2500 (max)	meters
Normal Exhaust Temperature	238	°C
Max Exhaust Temperature	260	°C
Relative Humidity	20-80 (non-condensing)	%
Voltage 50AN (US/Canada)	220-230V, Single Phase	Volts AC
Voltage 50AE (Europe)	400V, Three Phase	Volts AC
Voltage 50AJ (Japan)	200V, Three Phase	Volts AC
Frequency	50/60	Hertz
Current 50AN (US/Canada)	30	Amps
Current 50AE (Europe)	17	Amps
Current 50AJ (Japan)	28	Amps
Installation/Over Voltage	Category II	
Pollution Degree	2	

Health and Safety Information

Device Safety Compliance

The EO Abator complies with the standard IEC/EN 61010-1 as demonstrated by the IEC Test Report that Underwriters Laboratories Inc. (UL) generated. The EO Abator is listed as Laboratory equipment and carries the UL and c-UL marks based on compliance to the standards UL 61010A-1 and CSA 22.2 No. 1010-1.92.

The Model 50AN and Model 50AE EO Abator comply with the CE mark related to the Low Voltage Directive 73/23/EEC as confirmed in the Declaration of Conformity.

EMC Compliance

The Model 50AN and Model 50AE EO Abator complies with IEC/EN 61326-1 as confirmed in the Certificate of Compliance generated by 3M. The Model 50AN and Model 50AE EO Abator comply with the EMC requirements of the CE mark EMC Directive 89/336/EEC.

The Model 50AN and Model 50AE EO Abator comply with the Australian EMC requirements as confirmed in the Supplier's Declaration of Conformity that is linked to the C-tick mark.

Note: The Model 50AN EO Abator has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio

communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe A respecte toutes les exigences due Reglement sur le materiel brouilleur du Canada.

General Information

Physical Dimensions
- Width ..... 900 mm (36.0 in.)
- Height ..... 800 mm (31.5 in.)
- Depth ..... 1050 mm (41.5 in.)

Suggested Service Area:
- Top..... 900 mm (36 in.)
- Left Side ..... 500 mm (20 in.)
- Right Side ..... 500 mm (20 in.)
- Front ..... 500 mm (20 in.)
- Back.....100 mm (4 in.)

Heat Source .....6 kW Electric Air Duct Heater
Minimum Air Flow .....1.4 NCMM (50 SCFM)
Weight ..... 163 kg (360 lbs.)
Maximum EO Feed Rate.....7.7 g/min (0.017 lbs./min)
Exhaust Temperature:
- Idle ("Ready")..... 138ºC (280ºF)
- Typical Operating (Processing EO) 238ºC (460ºF)
- Upper Limit 260ºC (500ºF)

SECTION 1: OPERATING INSTRUCTIONS

System Description:

The 3M EO Abator is intended to remove ethylene oxide (EO) from the exhaust of 3M Steri-Vac Sterilizers and Aerators. The EO Abator converts EO into carbon dioxide and water vapor through a heated catalytic process.

The 3M EO Abator was designed for use with 3M Steri-Vac Sterilizers and Aerators. The Abator includes all controls and indicators necessary to maintain safe operating conditions within the processing limits of the machine. This system provides an internal operating condition where the EO concentration is well below the lower flammability limit of 30,000ppm EO in air.

The process by which the Abator system works is one in which ambient air is pulled by the blower into the Abator system through the air inlet and pre-filter. The air then passes through the electric heater where it is heated to approximately 138ºC (280ºF). The heated air then passes through the catalytic cell inlet where EO is fed into the air stream through a solenoid valve and injection manifold. As the EO enters the heated air stream, it is diluted with air before it enters the catalytic cell where the EO is catalyzed. The heat given off by this catalytic process raises the temperature of the catalytic cell and the effluent air stream in proportion to the amount of EO introduced into the Abator system. When properly installed with 3M Steri-Vac Sterilizers and/or Aerators, the temperature should not exceed 260ºC (500ºF). If this value is exceeded, damage to the catalytic cell and other internal components will result.

The EO Abator achieves at least 99.9% efficiency (time weighted average) in removing ethylene oxide (EO) during sterilization portion of cycle (when EO>100ppm) at normal operating temperatures and concentrations.

The EO Abator achieves at least 99.0% efficiency (time weighted average) in removing ethylene oxide (EO) during aeration portion of cycle (when EO<100ppm) at normal operating temperatures and concentrations.

The EO Abator must be tested for efficiency at installation and annually thereafter to ensure proper operation and to determine when the catalyst cell needs to be replaced.

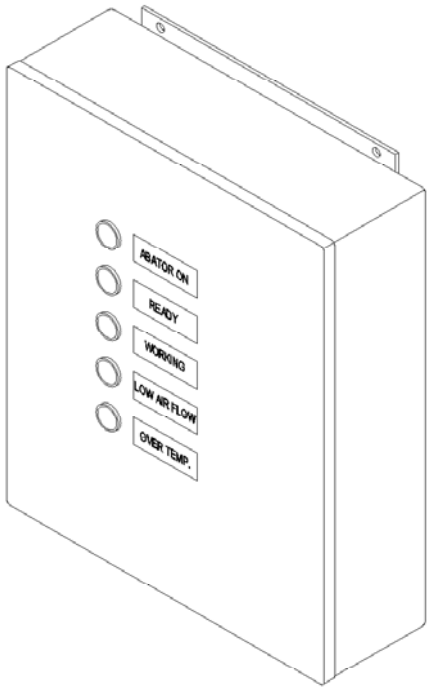
Explanation of Indicator Panel:

Indicator	**Normal Status**	**Malfunction**
Abator On (Green)	ON/OFF	Indicates Abator is on. If OFF, check main disconnect to Abator.
Ready (Green)	ON	OFF indicates one of the following problems: 1. Low process temp 2. High process temp 3. Low air flow 4. Open RTD
Working (Green)	ON/OFF	ON indicates Abator is processing EO. OFF indicates no or low concentrations of EO.
Low Air Flow (Red)	OFF	ON indicates one of the following problems: 1. Plugged pre-filter (Must replace every 6 months or sooner) 2. Blocked Outflow 3. Blower Malfunction
Over Temperature (Red)	OFF	ON indicates system malfunction. After completion of cycle, shut down. Call for service. **DO NOT RESTART.**
Over Temperature (Red) Slow Flash (1 flash/second)	OFF	ON indicates high heater sheath temperature or open RTD.
Over Temperature (Red) Fast Flash (3 flash/second)	OFF	ON indicates the temperature rate of rise too fast due to low airflow

Operating Instructions for 4XL/5XL/8XL and 400C Steri-Vac Sterilizers

1. Auto-On: The Abator is turned on automatically by the sterilizer.
   Note: The Abator will be automatically turned on if the power to the Steri-Vac is turned off, or the communication connections between the sterilizer and Abator are lost.

2. Abator system ready indicator (green) on indicator panel illuminates when the Abator is ready to process EO. With ambient temperature of 21ºC (70ºC), the indicator should illuminate within 40 minutes. If the Abator system ready indicator light does not illuminate within this time frame, observe the fault lights on the control panel and correct problem before operating unit.



3. End of cycle. The Abator system is stopped automatically by the sterilizer. A timer lets the blower run 15 minutes to cool the Abator before shutting down.

4. When performing maintenance or when the over temperature indicator is on, the system should be shut down. When shutting down the Abator, make sure the sterilizer is not venting EO and that the Abator is not processing EO. In an emergency situation, the Abator can be shut down at any time. To shut down the system in an emergency, have an authorized person switch the main circuit breaker in the control panel to the off position.

5. To operate the aerator, the aerator switch on the accessory panel must be on and aerator must be plugged into the accessory outlet.

Typical Abator System Cycle for 4XL/5XL/8XL and 400C Steri-Vac Sterilizers:

After the sterilizer is loaded, the sterilizer door is closed and the cycle is started. The Abator system starts automatically. After approximately 40 minutes, the Abator ready light illuminates indicating the Abator is ready to begin processing EO. When the sterilizer purges EO from the cycle, it enters the Abator through the EO inlet where it is internally fed to the catalytic cell. The temperature of the catalytic cell increases proportionately to the amount of EO fed into the Abator. After the sterilizer cycle is complete and the door is opened, the Abator continues to run for 15 minutes to cool the system down before shutting off. Ambient air flow through the Abator cools the catalytic cell.

SECTION 2: INSTALLATION INSTRUCTIONS

Planning the EO Abator Installation

Plan for the installation before the equipment is purchased. Consider such things as location, machine service requirements, and code compliance. Obtain all state and local regulations affecting the use of Ethylene Oxide (EO). If possible, review the proposed installation with the department manager, facilities engineer, architect, 3M sales or service representative.

Ensure that anyone who will be involved with the EO Abator system installation receives a copy of this Operation and Installation Manual. Contact your local 3M Health Care representative or 3M Health Care Service Center at (800) 292-6298 for additional copies, or if you have any questions about installing the EO Abator system.

Service Installation Review and Checkout

Contact your local 3M service representative by phone when the EO Abator system is installed (i.e. all electrical and mechanical services are connected and functioning).
Do not operate the EO Abator system without having a 3M service representative check the installation.

Complete the customer checklist. Call your service representative to review the installation. Discuss any necessary changes before the checkout visit to assure that the sterilizer and EO Abator system are installed and will operate according to 3M specifications.

Optional Configurations

The EO Abator can be used with 4XL, 5XL, 8XL and the 400C 3M Steri-Vac sterilizers. A maximum of two Model 4XL, two Model 5XL, two Model 8XL, or a combination of two of these sterilizers can be connected to a single EO Abator unit. Up to two additional 3M Model 33 or Model XL Aerators can be added to the installation. The EO Abator interfaces with the Model 4XL, Model 5XL and Model 8XL to start and stop automatically.

For the Model 400C 3M sterilizer, one EO Abator unit is required for each sterilizer. A special interface is required for proper operation of the 400C sterilizer.

For 3M Model 33 or Model XL Aerator installations, the EO Abator must either run continuously, or be wired as shown in Figure 9. See Figure 9 for Aerator venting connections.

Contact your 3M service representative with questions.

Customer Checklist

Read this entire Installation Manual carefully before installing your EO Abator system. The following checklist is provided to ensure that you consider all important aspects of the installation. Contact your local 3M service representative with any questions.

The completed checklist is to be used when contacting your 3M service representative to review your EO Abator system installation. Completion helps ensure that 3M installation specifications are met.

Customer Checklist

Location of EO Abator System

1. Is the unit mounted in a well ventilated area, away from ignition sources and personnel traffic?	Yes ☐	No ☐
2. Is the unit bolted securely to the floor?	Yes ☐	No ☐
3. If the unit is located outdoors, is the EO Abator system in a heated weatherproof enclosure easily accessible by service personnel?	Yes ☐	No ☐
4. Is the heated enclosure maintained at or above 0°C (32°F) at all times?	Yes ☐	No ☐
5. Are there 910 mm (36 inches) of clearance on top and 510 mm (20 inches) of clearance on front, back, and electrical box side, and 100 mm (4 inches) of clearance on the side opposite the control box?	Yes ☐	No ☐
6. What is the distance between the indicator panel and the EO Abator system? (must be less than 40M (130 ft.))	_____ M (ft.)	
7. What is the distance between the earth ground and the EO Abator system? (must be less than 40M (130 ft.))	_____ M (ft.)	
8. How many sterilizers and/or aerators are connected to the EO Abator system? List sterilizer model and quantity.	Model_____Quantity____ Model_____Quantity____	

Customer Checklist

Electrical Supply

9. What current is the EO Abator system electrical supply fused at? _____

10. What is the supply voltage rating? _____

11. What is the voltage reading at the EO Abator system? _____

12. Is a 1 KVA boost transformer (Auto-Transformer) installed if supply voltage is 208 VAC? Yes ☐ No ☐

13. What gauge (AWG) ground wire is used for the indicator panel to control panel connection? _____AWG

14. What gauge (AWG) ground wire is used for the earth ground to the control panel connection? _____AWG

15. Are jumper wires installed if only one sterilizer is connected to the EO Abator system? Yes ☐ No ☐

EO Inlet

16. Does the EO inlet line connect directly to the EO Abator system without being terminated into any other exhaust system? Yes ☐ No ☐

17. What type of material is the EO inlet line made of? _____

18. What is the diameter in mm (in.) of the EO inlet line? _____O.D.

19. What is the total length in M (ft.) of the inlet line? _____M (ft.)

20. How many sterilizers vent to the EO inlet line? _____

Customer Checklist

21. Has the EO inlet line been checked to ensure it is gas tight? Yes ☐ No ☐

Safety Vent Line

22. Does the safety vent line go directly from the EO Abator system to the outside atmosphere without terminating at any other exhaust system? Yes ☐ No ☐

23. What type of material is the safety vent line made of? _____

24. What is the diameter in mm (in.) of the safety vent line? _____O.D.

25. What is the length in M (ft.) of the safety vent line? _____M (ft.)

26. If the safety vent line is run horizontally, how far in M (ft.) does it extend outside the building? _____M (ft.)

27. Does the safety vent line termination have a downward bend? Yes ☐ No ☐

28. Is the safety outlet located within 8 M (25 ft.) of any possible sources of ignition or any openings to the building interior? Yes ☐ No ☐

29. Has the safety vent line been checked to ensure that it is gas tight? Yes ☐ No ☐

Exhaust System – Arrangement 1

30. Is there a negative pressure on the duct? Yes ☐ No ☐

31. Is the measured airflow in the 152 mm (6 inch) duct between 5.66-7.08 MCMM (200-250 SCFM)? Yes ☐ No ☐

Customer Checklist

Exhaust System – Arrangement 2

32. Has an insulated duct been connected to the EO Abator outlet?	Yes ☐	No ☐
33. Is the insulated duct dedicated solely to the EO Abator system outlet all the way to its outside termination?	Yes ☐	No ☐
34. Is the exhaust system leak tight?	Yes ☐	No ☐
35. Is the back pressure in the exhaust duct with the "abator ready" light illuminated, less than 7.62 mm (0.3 in.) H_20?	Yes ☐	No ☐
36. Is the ductwork material impervious to EO?	Yes ☐	No ☐
37. What is the diameter in mm (in.) of the duct?	_____mm (in.)	
38. What is the distance in M (ft.) between the outside exhaust termination and any sources of building air intake?	_____M (ft.)	

General

39. Did you obtain all state and local regulations concerning EO emissions?	Yes ☐	No ☐

Purchaser's Responsibility

Only health care professionals, or other appropriately trained personnel in health care and industrial areas, should use this equipment. It is a violation of federal law to use this product in a manner inconsistent with its labeling. Injury to persons or property can result unless the operating instructions are followed carefully.

It is the purchaser's responsibility to provide the necessary machine service requirements to the area where the sterilizer and EO Abator system are to be installed. These services include electricity, EO inlet line, safety vent line, and a dedicated exhaust system.

Because of varying local codes and labor policies, it is also the responsibility of the purchaser to locate the EO Abator system in its permanent location and to connect the services to the machine. It is the purchaser's responsibility to ensure that local requirements are met.

EO Abator Efficiency Testing

During the installation and start up process performed by 3M, the EO Abator is tested for electronic function. It is the recommendation of 3M Company that the EO Abator be tested for efficiency shortly after installation and annually there after by using a gas chromatography method. This method of testing is accepted by most local and state agencies and will provide an efficiency baseline of performance. If independent certification of efficiency is required by state or local authorities or if it is desired by your facility, 3M Company recommends that your facility contact a test lab or company certified by state or local agency.

Return used catalytic cells to 3M Health Care Service Center for proper handling.

Unpacking the EO Abator

Uncrate the unit and remove any packing material. Examine the EO Abator system and indicator panel for any damage that may have occurred during shipment. If any damage occurred, immediately fill out a damage claim with the transportation company and notify your 3M service representative. The transportation company assumes liability for shipping damage only for a ten-day period starting the day of delivery. After ten days, the purchaser must accept the merchandise as delivered.

Packaged with the EO Abator system are two cardboard boxes containing a plastic rain cap with metal clamp and an air pre-filter with metal clamp. Install the rain cap to the top of the air inlet tube with the clamp provided (see Figure 7). Remove the cover of the EO Abator and install the air pre-filter on the air inlet tube inside the EO Abator with clamp provided (see Figure 7). The indicator panel is also in the crate.

Note: Pre-filter must be changed by authorized service personnel every 6 months or sooner under normal operation.

Locating the EO Abator System

Since Ethylene Oxide is both flammable and toxic, it is important to locate the EO Abator system in a well-ventilated area away from main traffic areas of personnel and any ignition sources. Hot exterior surfaces on the EO Abator system are normal during operation. The EO Abator system exterior cabinet can reach temperatures as high as 50°C (122°F). Temperatures within the machine can approach 260°C (500°F).

Select an appropriate site well in advance of purchasing the EO Abator system. Contact your building engineering department for help in selecting a site. **It is suggested that the EO Abator system be installed indoors.** This saves added installation expense. If this is not possible, the EO Abator system must be installed in a heated, weatherproof enclosure easily accessible by service personnel. This enclosure must be maintained at or above 0°C (32°F) at all times. All wiring to and from the control box must be liquid tight until it is indoors.

The EO Abator system must be bolted down. Therefore, position the EO Abator system in its proper location and secure it to the floor with 9.53 mm (3/8 in.) diameter bolts or lag screws (minimum 38 mm [1 ½ in.] long) through holes in feet to the floor. To meet seismic requirements, the EO Abator system must be installed using fasteners designed to meet Title 24 of the California Administrative Code. You must have your local architect recommend the proper fasteners. Provide adequate space all around unit for periodic maintenance and service access (see Figure 7).

Securely mount the indicator panel indoors and near the sterilizer in a location that is easily visible by the sterilizer operator. Wiring connections between the EO Abator system, the indicator panel, and the sterilizer are discussed in Electrical Requirements.

Do not install the EO Abator system in areas where flammable gases or liquids other than EO are present.

SECTION 3: INSTALLATION REQUIREMENTS

General Electrical Requirements

All internal wiring within the EO Abator system has been connected at the factory. External wiring must be in accordance with local and/or national codes and plant procedures. Connect a dedicated service to the main circuit breaker located inside the control box.

If connecting Model 50AN to 208 VAC single phase service, use a boost transformer to bring the voltage to 220 VAC (recommended 1 KVA Auto-transformer).

Model	Voltage	Current Rating	Main Breaker	Frequency
50AN	220-230VAC, 1 Phase	30A	40A	50/60Hz
50AE	400VAC, 3 Phase	17A	20A	50/60Hz
50AJ	200VAC, 3 Phase	28A	40A	50/60Hz

Electrical Requirements: Models 4XL, 5XL, and 8XL Sterilizers

Connect corresponding wire numbers between indicator panel terminal strip and the control box terminal strip (see Figures 2, 3, 5, and 6). Use three shielded cables (recommended Belden 18 AWG Part #83656) and limit the length of the wire to 40 M (130 ft.). The shield on the control panel end of the cable must be connected to the ground lug in the control panel. A ground wire from the indicator panel to the EO Abator system is required. If the indicator panel is within 12 M (40 ft.) from the EO Abator system, a 12 AWG ground wire should be used. If the length is 12-24 M (41-80 ft.), a 10 AWG ground wire should be used. For 25-40 M (81-130 ft.) length, an 8 AWG ground wire should be used. **In no case is the indicator panel to be mounted more than a maximum of 40 M (130 ft.) away from the EO Abator system. The indicator panel must be located in the sterilizer area.**

A ground wire from the ground lug in the control panel to earth ground is required. Use the same wire criteria as listed above for the indicator panel to determine the proper wire AWG for the distance run between the control panel and earth ground.

Connect wiring between the sterilizer(s) interface box and the EO Abator system indicator panel (see Figures 2, 3, 5, and 6) using 6 conductor 18 AWG shielded cable (recommended Belden Part #83656). A 3M service representative will connect the wires to the sterilizer.

When connecting only one sterilizer, a jumper wire must be connected from terminal 27 to 25 and from terminal 28 to 26 inside the control box.

Electrical Requirements: Model 400C Sterilizer

Only one sterilizer Model 400C can be connected to the EO Abator system. Connect corresponding wire numbers between the remote panel terminal strip and the control box terminal strip (see Figure 4). Use two 6 conductor 18 AWG shielded cables (recommended Belden Part #83656) and limit the length of wire to 40 M (130 ft.). The shield on the control panel end of the

cable must be connected to the ground lug in the control panel. A ground wire from the remote panel to the EO Abator system is required. If the remote panel is 12 M (40 ft.) or less away from the EO Abator system, a 12 AWG ground wire should be used. If the length is 12-24 M (41-80 ft.), a 10 AWG ground wire should be used. From 25-40 M (81-130 ft.) length, an 8 AWG ground wire should be used. **In no case is the remote panel to be mounted more than a maximum of 40 M (130 ft.) away from the EO Abator system.**

A ground wire from the ground lug in the control panel to earth ground is required. Use the same wire criteria as listed above for the remote panel to determine proper wire AWG for the distance run between the control panel and earth ground.

A jumper wire must be connected from terminal 27 to 25 and from terminal 28 to 26 and terminal 3 inside the control box.

EO Inlet Line Requirements

A combination of two Steri-Vac gas sterilizers Model 4XL, 5XL, or 8XL may be vented through a common vent line to the EO Abator system.

Connect the sterilzer vent line to the EO Abator system's 1.9 cm (3/4 in.) National Pipe Thread (NPT) EO inlet. See Figure 7.

The diameter of the vent line used for the EO inlet and safety vent depends on the combined length of the two vent lines. Use 1.9 cm (3/4 in.) to 2.5 cm (1 in.) copper tubing to connect sterilizer discharge to the EO Abator system EO inlet. Refer to table for line sizes. Use a 1.9 cm (3/4 in.) National Pipe Thread (NPT) connection at the EO Abator system.

Avoid sags or loops in all lines to prevent moisture buildup at other points in the line. Ensure that the vent line is gas tight from the sterilizer to the EO Abator system. Use flanged or compression fittings at the sterilizer outlet. Braze or solder all the other line fittings. For additional information refer to the 3M Steri-Vac installation guide.

Number of Sterilizers	Combined Length of Vent Lines							
	8 M (25 ft.)	15 M (50 ft.)	23 M (75 ft.)	31 M (100 ft.)	46 M (150 ft.)	61 M (200 ft.)	76 M (250 ft.)	91 M (300 ft.)
1	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
2	3/4	3/4	3/4	3/4	3/4	1	1	1

Safety Vent Line Requirements

The EO Abator system is equipped with a safety vent port to vent EO to the atmosphere in the event of an EO Abator system malfunction. Connect a safety vent line to the 1.3 cm (1/2 in.) NPT port using 1.9 cm (3/4 in.) diameter O.D. copper tubing. Install 180º elbow (turned down) with a "bug screen" at the end of the line. Refer to Table 1 for determining proper line size based upon the combined length of both safety vent and EO inlet lines.

The safety vent line could contain significant amounts of Ethylene Oxide in the event of a system malfunction.

Do not terminate the line within 8 M (25 ft.) of any possible sources of ignition or any opening to the building interior such as fresh air inlets, unsealed windows, or pedestrian traffic areas. Keep all of the vent line, with the exception of a turned down extension terminating on the roof top or exterior wall, inside the building. This prevents moisture from freezing in the line and blocking the vent. For additional information refer to the appropriate 3M Steri-Vac sterilizer installation guide.

Exhaust System Requirements

The temperature of the air exhaust from the EO Abator can be as high as 260°C (500°F). The EO Abator exhaust can contain low concentrations of EO, typically less than 2.5 PPM. **The EO Abator exhaust must be connected to a dedicated exhaust system supplied by the customer.** Note: There are two exhaust ducting arrangements that can be used (see Figure 1).

Arrangement 1

The EO Abator exhaust is mixed with room air in a negative pressure duct. The advantage of this arrangement is that all leaks are into the duct. The dedicated duct used for the sterilizer hood (if the sterilizer is equipped with a hood) may be used for this arrangement if the ducting and blower is sized to handle the extra 5.66 NCMM (200 SCFM) of air required for the EO Abator. Use the information in the 3M Steri-Vac XL Series Planning and Installation Manual (78-8078-8490-9) for ducting and blower installation.

This arrangement requires an air mixing valve that is attached to the EO Abator exhaust. Air mixing valve (part number 78-8078-9814-9) is available through the 3M Health Care Service Center. Connect the air mixing valve to the EO Abator exhaust flange using high temperature RTV to seal the flanges, then tighten flange clamp (part number 78-8069-7474-3) to lock the parts together. Connect the outlet of the air mixing valve 152 mm (6 in.) O.D. to the duct system with 152 mm (6 in.) metallic ducting (Figures 1 and 8). An airflow damper will be required in the 152 mm (6 in.) duct downstream of the mixing valve to balance the airflow between the EO Abator and the duct system. The airflow in the 152 mm (6 in.) duct must be maintained between 5.66-7.08 NCMM (200-250 SCFM) with the EO Abator running and the "abator ready" light illuminated.

Arrangement 2

The exhaust system is a sealed type which uses the blower in the EO Abator to move the exhaust out of the building. This duct is under positive pressure and must be sealed. It must

be dedicated to the EO Abator exhaust only. The suggested ducting to use is Selkirk Metalbestos Model PS in 152 mm (6 in.) size. It must be installed per the manufacturer's recommendation.

The 152 mm (6 in.) Model PS ducting can be used for runs up to 183 meters (600ft.) long minus 12 meters (40 ft.) for each 90° elbow.

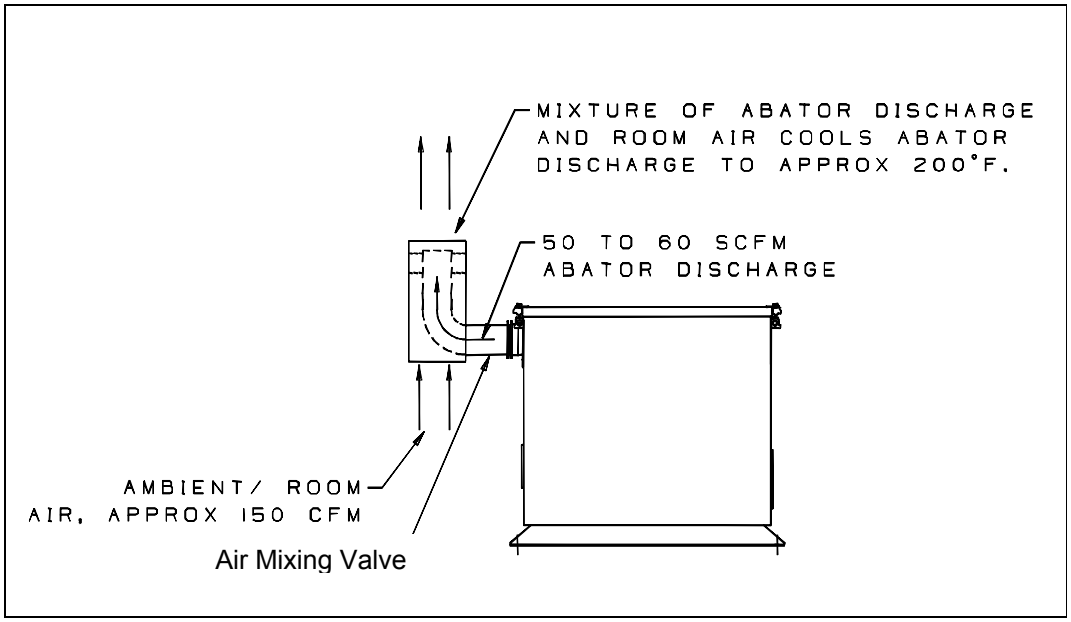
The Metalbestos adapter (part number 78-8078-9813-1) is needed to connect the EO Abator exhaust to the Metalbestos ducting, and is available through the 3M Health Care Service Center.

Connect the Metalbestos adapter to the EO Abator exhaust using high temperature RTV between the two flanges and then clamp the flanges together with clamp (part number 78-8069-7474-3) to lock the parts together.

The termination for either ducting arrangement must not be within 8 meters (25 ft.) of any opening to the building interior such as fresh air inlets, unsealed windows, and/or pedestrian traffic.

SECTION 4: FIGURES

Figure 1 ***Negative Pressure System – Arrangement 1***



Positive Pressure System – Arrangement 2

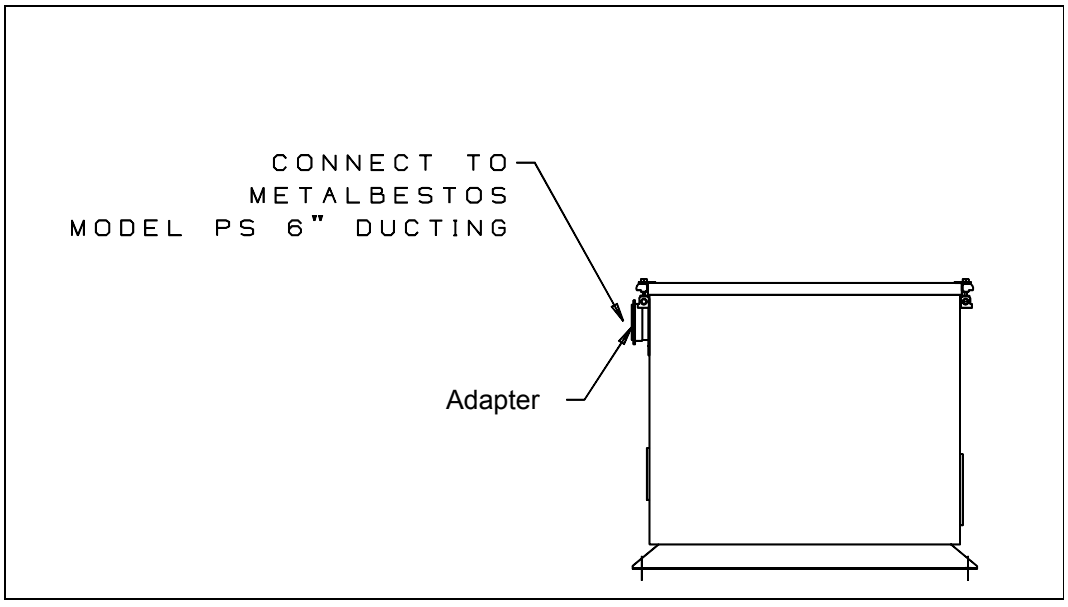
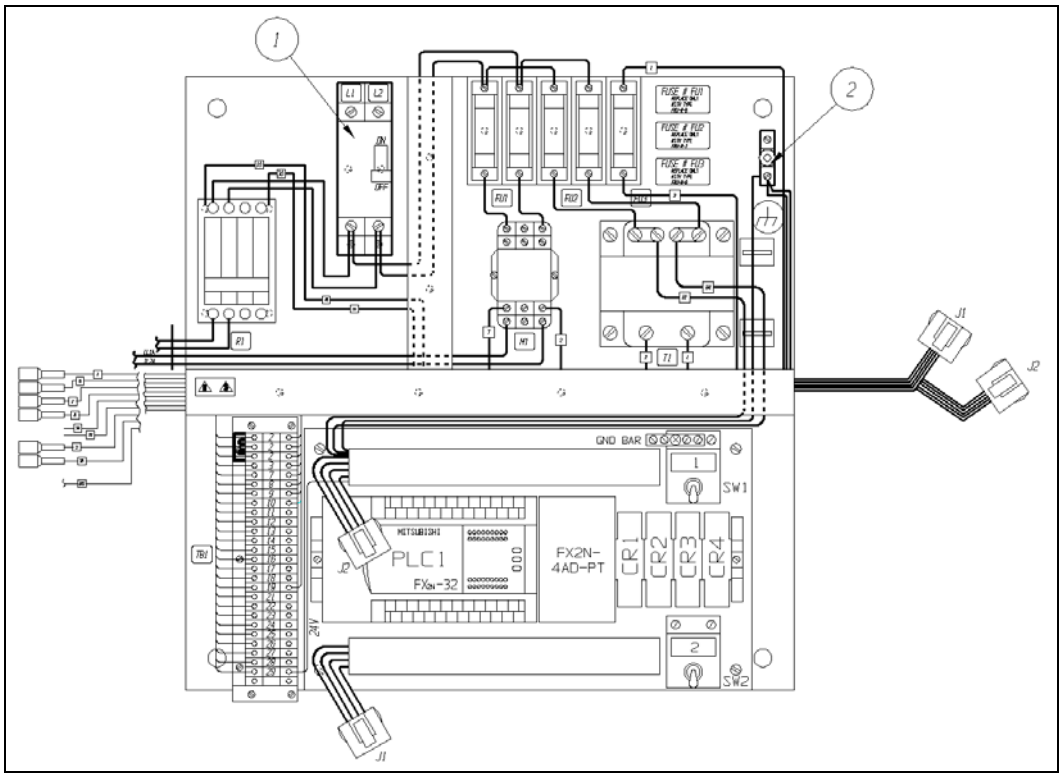
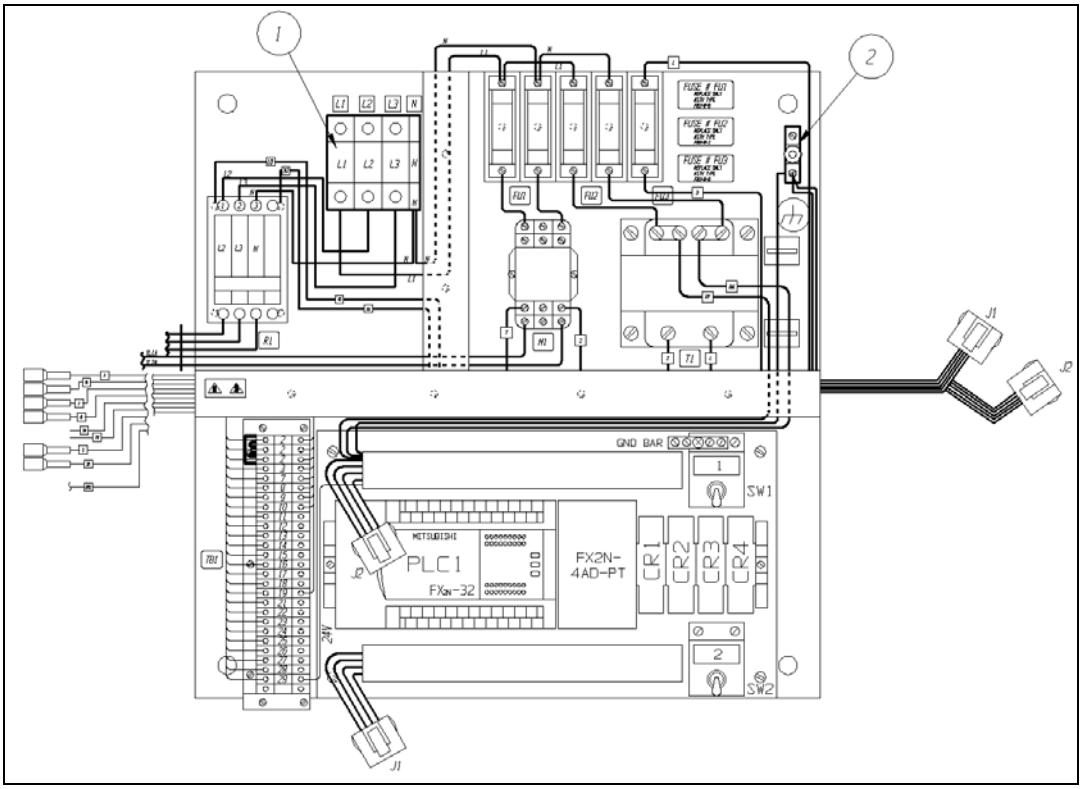


Figure 2 ***View of Inside the EO Abator Control Box***

Model 50AN:
Connect 220-230 VAC to circuit breaker (1) and connect ground wire to ground lug (2).



Model 50AE:
Connect Three Phase 400 VAC and Neutral to circuit breaker (1) and connect ground wire to ground lug (2).



Model 50AJ:
Connect Three Phase 200 VAC to circuit breaker (1) and connect ground wire to ground lug (2).

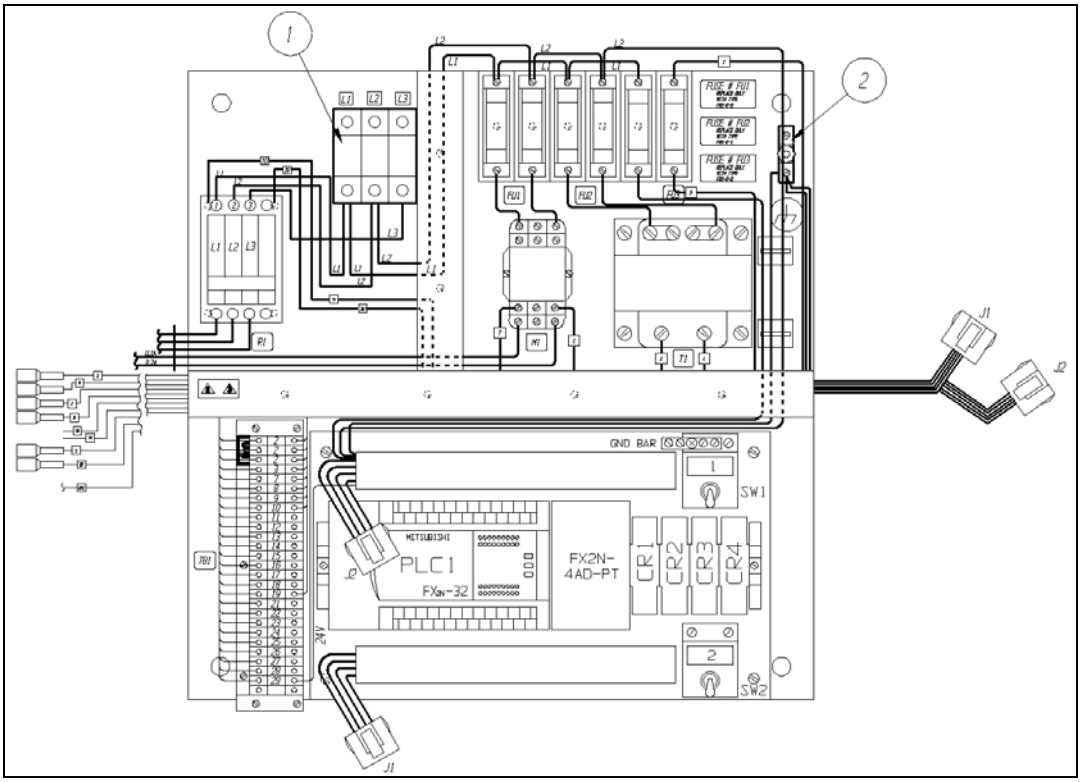


Figure 3 ***For 4XL and 5XL(Terminal Strip Connection) Sterilizers***

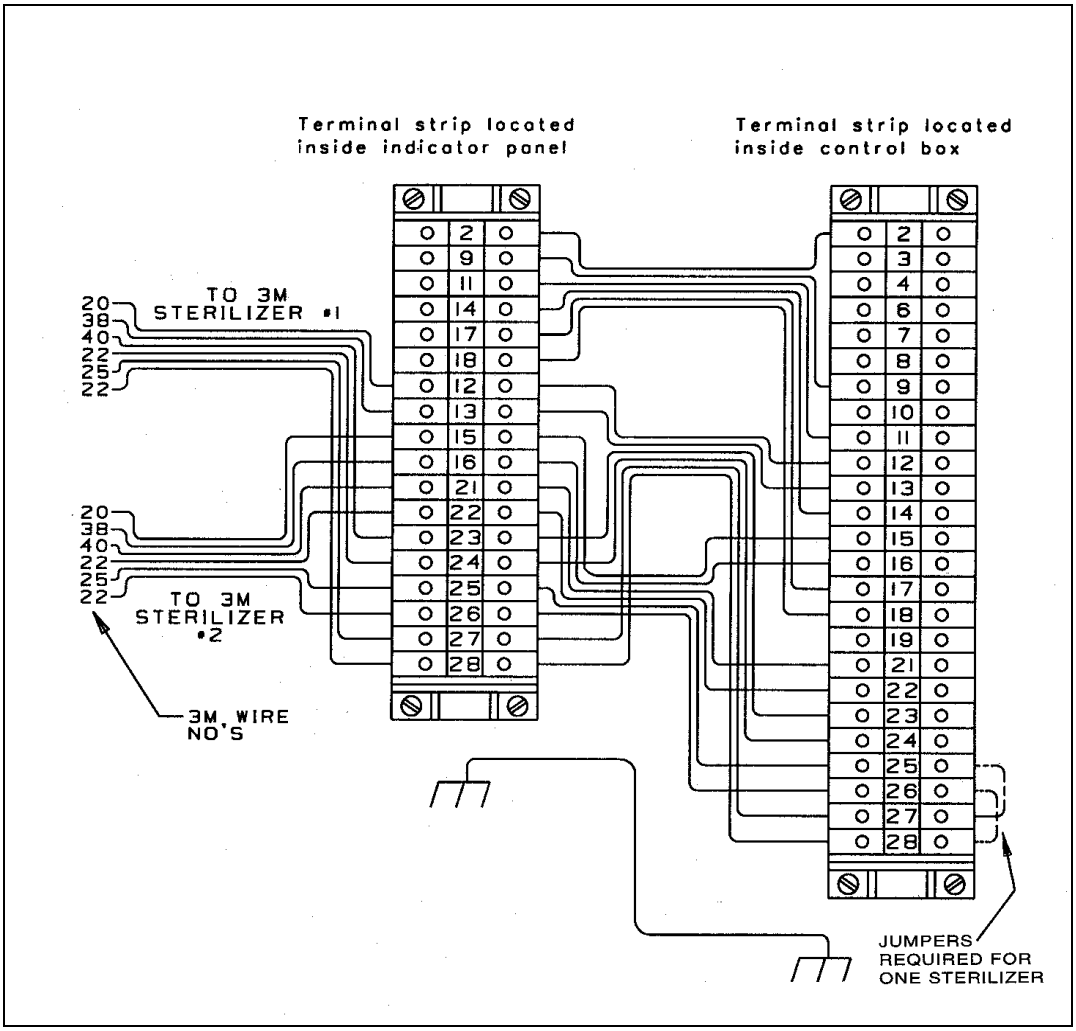


Figure 4 ***For 400C Sterilizers***

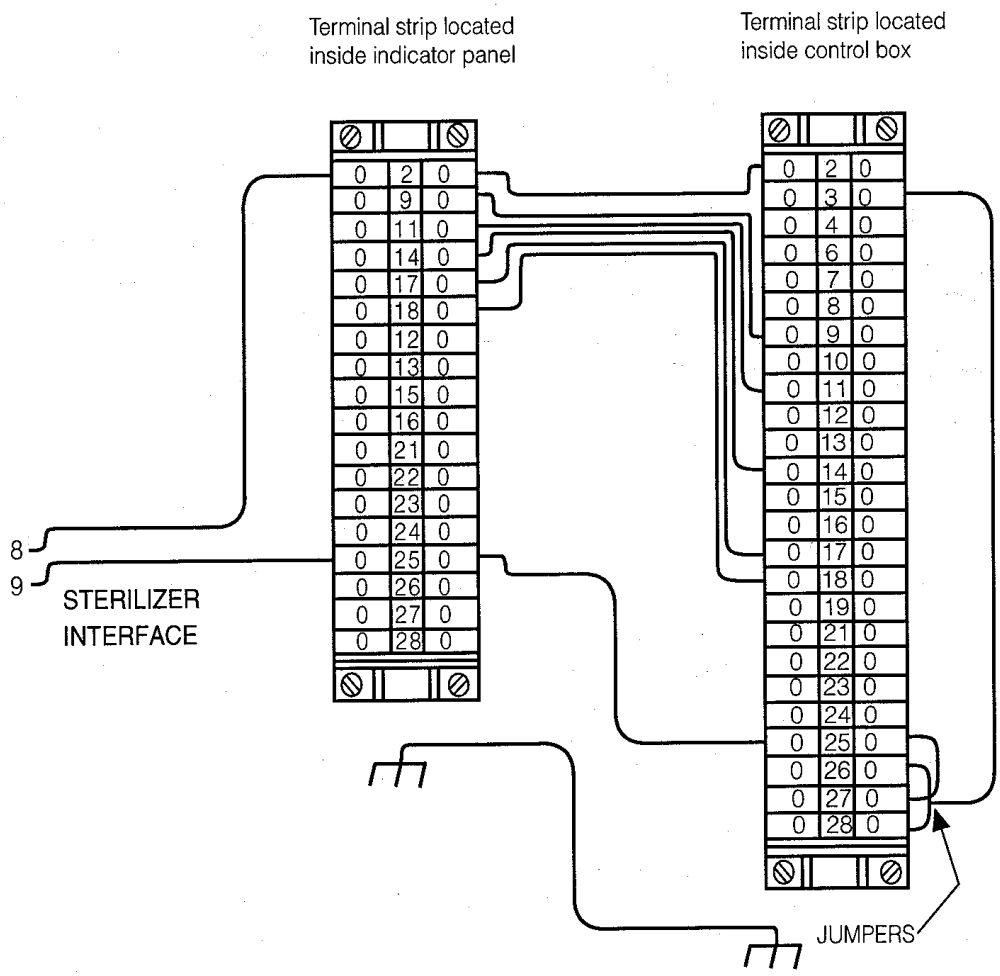


Figure 5 ***For 8XL Sterilizers and 5XL("D" Connector) sterilizers***

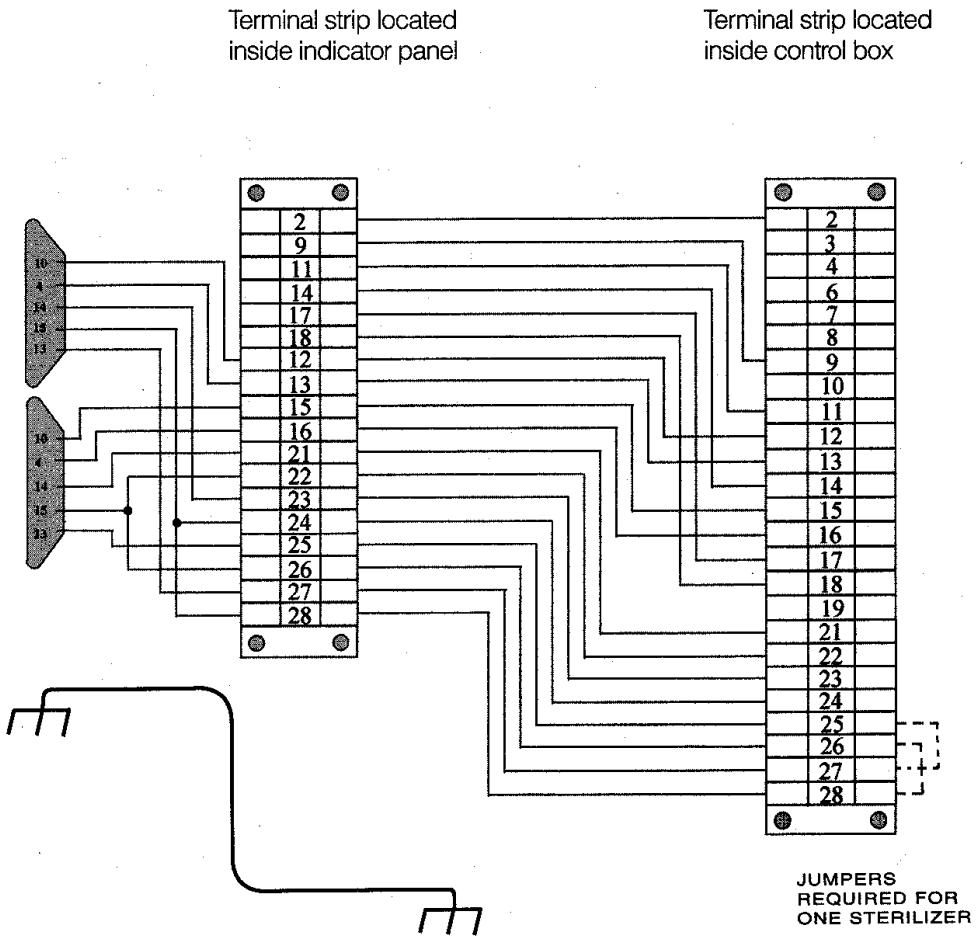


Figure 6 ***To connect 3M Steri-Vac Models 4XL, 5XL and 8XL Sterilizer(s) to EO Abator***

If only one 4XL/5XL/8XL sterilizer is connected, connect it's wires as follows: A jumper wire is connected from abator terminal 27 to 25 and from terminal 28 to 26.

8XL / 5XL "D" Connector Sterilizer #1 PIN #	4XL / 5XL 3M Steri-Vac Sterilizer #1 Wire #	to	EO Abator Indicator Panel Terminal #
10	20		12
15	22		24
-	22		28
13	25		27
4	38		13
14	40		23

If a second sterilizer is connected, connect wires to these terminals:

8XL / 5XL "D" Connector Sterilizer #2 PIN #	4XL / 5XL 3M Steri-Vac Sterilizer #2 Wire #	to	EO Abator System Indicator Panel Terminal #
10	20		15
15	22		22
-	22		26
13	25		25
4	38		16
14	40		21

Note: One 8XL/5XL "D" connector cable (part number 78-8078-6209-5) is provided with each EO Abator. Additional cables are available through the 3M Health Care Service Center.

Note: Use shielded cable (Belden 18 AWG Part #83656).

Figure 7 ***Clearances Required***

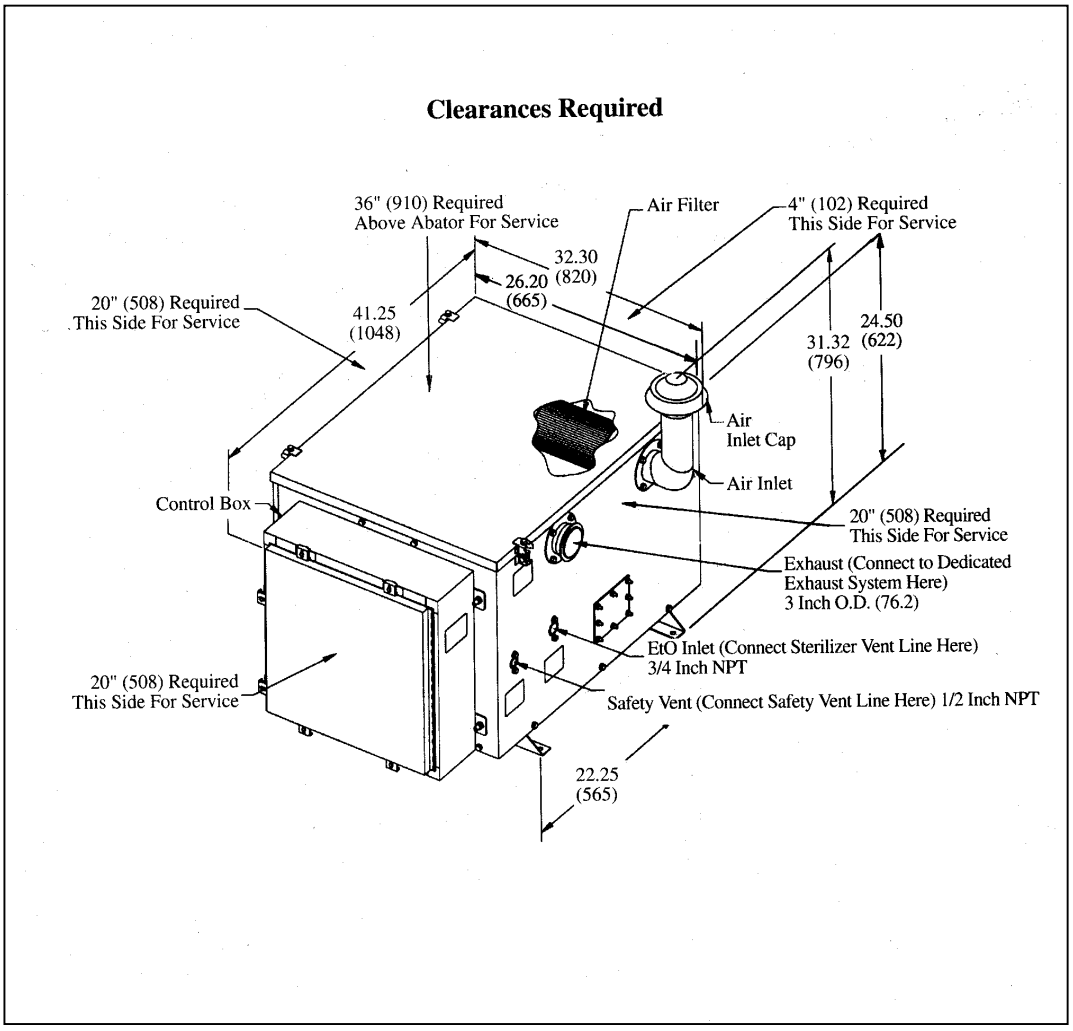


Figure 8 ***Multiple Hoods, Aerators and EO Abator Vented into a Common System***

Note: Safety Vent Line required, but not shown.

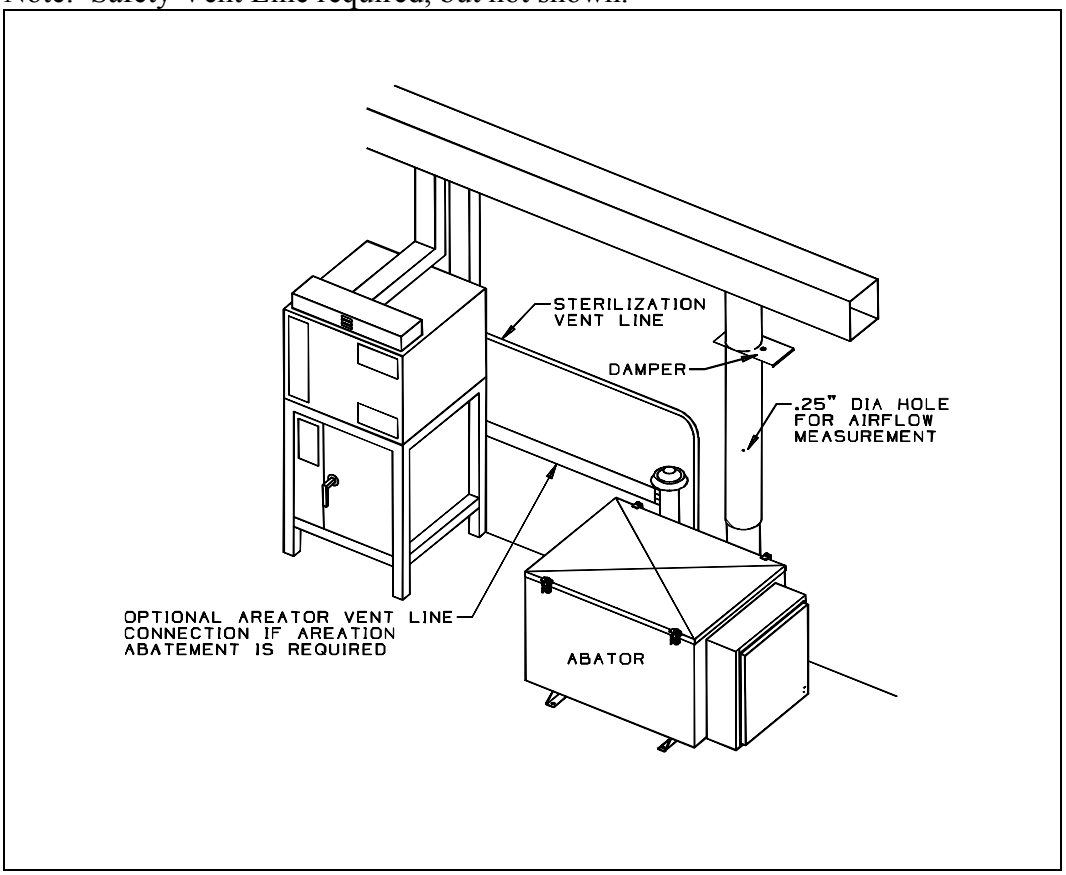
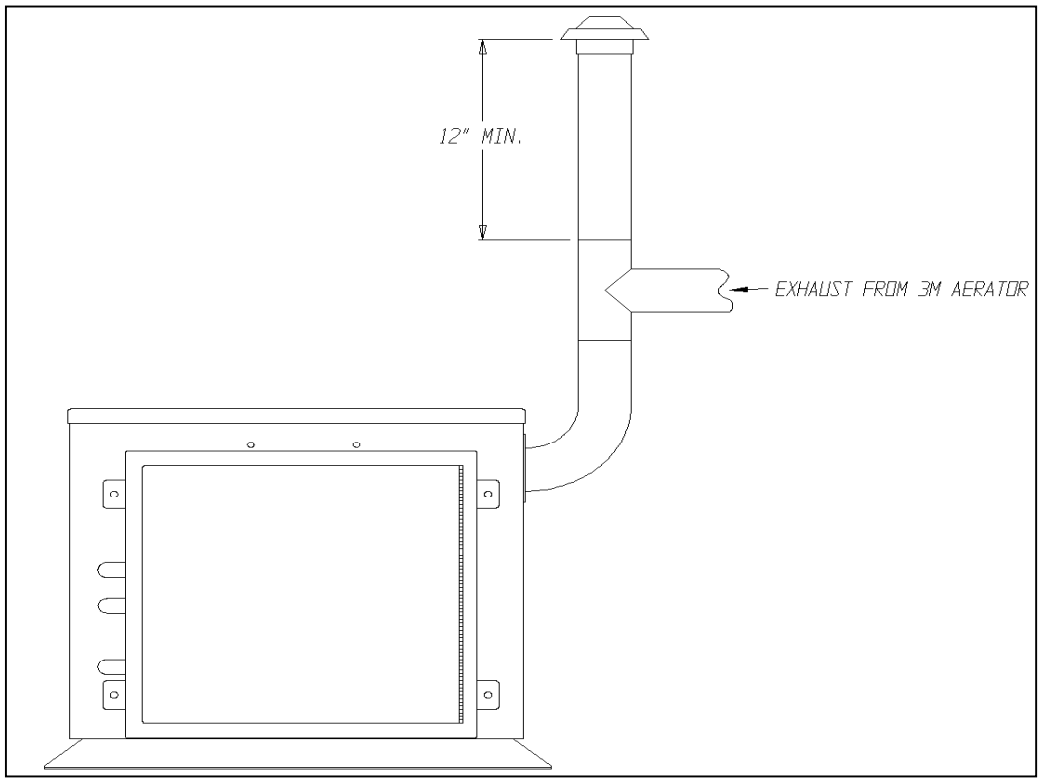
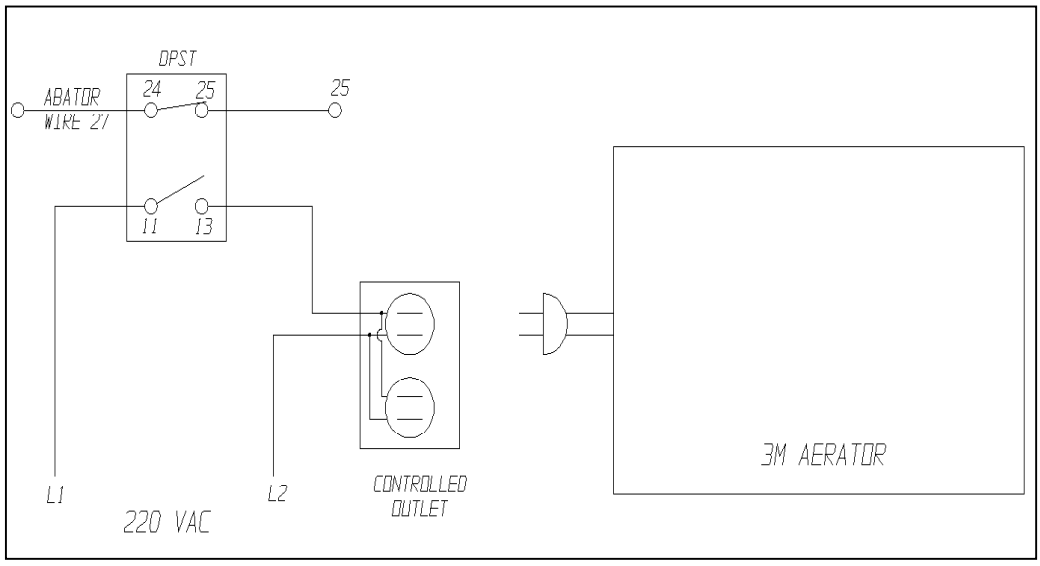


Figure 9 ***Aerator Venting Connection / Aerator Electrical Connection***





3M Authorized Service

3M Health Care has established a worldwide service organization to provide trained technicians to care for your equipment. It is recommended that service of the EO Abator be closely coordinated and combined with the service program established for the sterilization equipment connected to the EO Abator. The EO Abator must be tested for efficiency at installation and annually thereafter to ensure proper operation and to determine when the catalyst cell needs to be replaced.

For servicing information in the USA, contact your local 3M service representative or the 3M Health Care Service Center at the following Address:

3M Health Care Service Center
Suite 200, Bldg. 502
3350 Granada Ave North
Oakdale, MN 55128

If you have questions, call 3M Customer Service: 1-800-292-6298.

Outside the USA, contact the local 3M Subsidiary.

Preventative Maintenance Agreement

For your convenience, 3M provides a preventative maintenance agreement (PMA) for purchase with your EO Abator. The PMA assures you of periodic maintenance of your EO Abator and emergency services. Contact your local 3M Health Care service representative or the 3M Health Care Service Center at the above address for PMA information.

3M Health Care
3M Center
Building 275-4E-01
St. Paul, MN 55144-1000
1-800-228-3957

CE

3M Health Care
D-41453 Neuss, Germany

Recycled paper
40% pre-consumer
10% post-consumer
Litho in U.S.A. with 3M film, proofing systems and offset plates.

78-8078-9942-8. Rev. A
Lit. Code: 70-2009-4384-6